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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Markus Allmendinger

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EXAMINER

VO, HAI

ART UNIT

PAPER NUMBER

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,656	<b>Applicant(s)</b> ALLMENDINGER ET AL.	
	<b>Examiner</b> Hai Vo	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 10-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-16 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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1. The art rejections over Cook (US 4,015,386) in view of EP 0 891 860 have been withdrawn in view of the present arguments. As pointed out by Applicants, Cook requires the lined hollow casing filled with a liquid foamable resin. EP'860 is related to a composite material wherein a ready-formed slab of rigid polystyrene foam laminated to the metal sheets via an adhesive material. It is technically impossible to filled the lined hollow casing with a ready-formed slab of polystyrene foam.
2. The art rejections over Cook in view of Vonken et al (US 5,470,888) have been overcome for the following reasons. Vonken requires a polystyrene foam having a post expansion operation by a subsequent heat treatment at 130°C which would cause premature intumescence of the Cook lining composition. Therefore, one skilled in the art would not be motivated to replace a polystyrene foam of Voken by the polyurethane foam of Cook because to do so would destroy the utility of the Cook reference, namely causing premature intumescence of the Cook lining composition. However, other rejections are maintained.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 10, 13 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Tay (US 2005/0176833). Tay discloses an insulation material comprising a foam core disposed between two metal plates (paragraph 98). The foam core comprises plurality of foam particles, each having the surface coated with a fire retardant material as shown in figures 3 and 5. The foam core is made from polystyrene foam, polyisocyanurate foam (paragraphs 110 and 110). The fire retardant coating includes hydrated sodium silicate (paragraph 43). Accordingly, Tay anticipates the claimed subject matter.
5. The art rejections over Tay have been maintained for the following reasons. Applicants contend that Tay teaches each polystyrene foam particle is coated with the fire resistant material and bonded together with a binder; therefore, Tay does not teach the fire resistant layer between the core material and the metal sheet. The examiner respectfully disagrees. The binder is a coating material which is a fire resistant material. Therefore, the fire resistant layer disposed between the core material and the metal sheet is contemplated by the disclosure of the Tay reference. The examiner notes that nothing in the claims requires the foam core **not** encapsulated by the fire resistant material. Accordingly, the art rejections are sustained.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11, 12, and 14 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tay (US 2005/0176833) in view of Ingram (US 4,035,315).

Tay does not specifically disclose a density of the foam core. Ingram discloses a fire-resistant, thermally insulating foam comprising molded polystyrene foam having a density of 2.0 pcf coated with an intumescent paint (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the foam core having a density as taught by Ingram motivated by the desire to provide a light weight insulating material.

8. Applicants aver that the combined teachings of Tay and Ingram would result in a foam core which would have the different properties from the foam core of the present invention. The arguments are not found persuasive for patentability because they are not commensurate in scope with the claim because nothing in the claim is specific about how the foam particles are bound to each other.

9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tay (US 2005/0176833) as applied to claim 10 above, further in view of Fujita et al (US 4,405,682). Tay discloses that "the coating of the fire resistant material applied to the particles at a thickness corresponding to the degree of fire resistance that is desired." Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the intumescent material on the foam particles at a thickness in the range instantly

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claimed because such a variable would have been recognized by one skilled in the art as dependent upon the degree of fire resistance that is desired. That is in line with *In re Aller*, 105 USPQ 233 which holds that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Tay does not specifically disclose the thicknesses of the foam core, and metal plate. Fujita discloses a fire-resistant, thermally insulating board as a building material comprising two steel plates with a foam core wherein an intumescent fire retardant composition is disposed between the foam core and at least one of the metal sheets (abstract, figure 1). Fujita discloses the foam having a thickness ranging from 10 to 200 mm (column 6, lines 10-16) and the steel plate which is about 0.05 to 10 mm thick (column 2, lines 10-15).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the foam core and the metal plate with the thicknesses as taught by Fujita because such are typical thicknesses of the foam layer and metal facing widely used in the fire resistant, thermally insulating board.

10. Applicants argue that the combination of the references are improper because the core materials are completely different. The arguments are not found convincing to overcome the finding of obviousness. The examiner notes that Fujita discloses an isocyanurate foam whereas Tay requires a polystyrene foam. As the basis of the rejections is not about substitution of the isocyanurate foam

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for the polystyrene foam but about the thickness of the foam core, differences in the core materials are not the driving factors in the thickness of the fire resistant insulation material of Tay. Further, both products of Fujita and Tay are related to a fire-resistant, thermally insulating board which serves the same purpose. The design and performance of both products are pretty much the same. The design factors include light weight, thickness of the foam core that are typically important to the performance of the fire-resistant, thermally insulating board. Accordingly, the examiner respectfully submits that, at the time of the present invention, one skilled in the art would be motivated to look to the fire resistant thermally insulating board of Fujita for a foam thickness.

11. Claims 10-14, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (US 4,405,682) in view of EP 0 891 860. Fujita discloses a fire-resistant, thermally insulating board as a building material comprising two steel plates with a foam core wherein an intumescent fire retardant composition is disposed between the foam core and at least one of the metal sheets (abstract, figure 1). The intumescent fire retardant composition is made from sodium silicate (column 3, lines 10-15). Fujita discloses the foam having a density from 0.02 to 0.2 g/cm<sup>3</sup> and a thickness ranging from 10 to 200 mm (column 6, lines 10-16). The steel plate is about 0.05 to 10 mm thick (column 2, lines 10-15). Fujita does not specifically disclose the foam core made from a polystyrene foam. EP'860 discloses a fire and heat resistant structure for cold-store buildings comprising two metal sheets with a foam core wherein an intumescent fire

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retardant mat is disposed between the foam core and at least one of the metal sheets (page 2, column 2, lines 1-15). EP'860 discloses the foam core being a polyisocyanurate foam or polystyrene foam (page 2, column 2, lines 1-5).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the polyisocyanurate foam with a polystyrene foam because two materials have been shown in the art to be recognized equivalent foam cores for the fire resistant, thermal insulating boards.

Fujita does not specifically disclose a thickness of the fire retardant intumescent composition. EP'860 teaches a fire retardant composite panel wherein the intumescent coating has a thickness ranging from 1 mm to 3 mm (page 2, column 2, lines 5-10). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the intumescent coating having a thickness as taught by EP'860 from the standpoints of weight reduction.

12. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (US 4,405,682) in view of EP 0 891 860 as applied to claim 10 above, further in view of Batdorf (US 5,786,095). Fujita does not specifically disclose a thickness of the fire retardant intumescent composition. Batdorf, however, disclose an intumescent based thermal barrier system comprising a silicate solution, an expandable microsphere intumescent agent and a frit material (abstract). Batdorf discloses the intumescent based thermal barrier coating having a thickness of 0.3 mm (column 6, lines 18-20). Therefore, it



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would have been obvious to one having ordinary skill in the art at the time the invention was made to use the intumescent coating having a thickness as taught by Batdorf from the standpoints of weight reduction.

13. The art rejections over Fujita in view of EP'860 have been maintained for the following reasons. Applicants contend that there is no motivation to substitute the polystyrene foam for the polyisocyanurate foam. The examiner respectfully disagrees. In the first place, EP'860 does disclose a fire resistant composite material comprising a foam core that can be either a polystyrene foam or a polyisocyanurate foam. This at least indicates that the polyisocyanurate foam and the polystyrene foam have been shown in the art to be recognized equivalent foam cores for the fire resistant, thermal insulating boards. Nowhere does EP'860 teach or suggest that polystyrene foam could not be used as a core material of the fire resistant composite panel. Applicants further aver that there is no guidance that the polystyrene foam could have been protected by a fire resistant layer because polystyrene foam readily melts and becomes flowable in the event of a fire. That is not true. The arguments appear to be in conflict with the disclosure of EP'860. The examiner directs the Applicants' attention to column 3, lines 30-40 of EP'860. When exposed to fire, the intumescent material freely expand and swell to the desired necessary thickness thereby forming the protective foamed char barrier. The expandable mica of Fujita and the mineral fibers of EP'860 are known to be thermally stable at least up to 200°C and will act as a thermal barrier material to prevent premature degradation or melting of

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the polystyrene foam under conditions of fire. Accordingly, there's no doubt that the intumescent material was suitable for application to a heat sensitive polystyrene foam substrate to improve overall fire resistance of the composite material.

14. Claims 10-14, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (US 4,405,682) in view of Spicuzza, Jr. et al (US 4,168,347).

Fujita discloses a fire-resistant, thermally insulating board as a building material comprising two steel plates with a foam core wherein an intumescent fire retardant composition is disposed between the foam core and at least one of the metal sheets (abstract, figure 1). The intumescent fire retardant composition is made from sodium silicate (column 3, lines 10-15). Fujita discloses the foam having a density from 0.02 to 0.2 g/cm<sup>3</sup> and a thickness ranging from 10 to 200 mm (column 6, lines 10-16). The steel plate is about 0.05 to 10 mm thick (column 2, lines 10-15). Fujita does not specifically disclose the foam core made from a polystyrene foam. Spicuzza discloses a fire and heat resistant structure comprising two metal sheets with a polystyrene foam core wherein an intumescent fire retardant mat is disposed between the foam core and at least one of the metal sheets (example 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the polyisocyanurate foam with a polystyrene foam because two materials have been shown in the art to be recognized equivalent foam cores for the fire resistant, thermally insulating boards.

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15. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (US 4,405,682) in view of Spicuzza, Jr. et al (US 4,168,347) as applied to claim 10 above, further in view of Batdorf (US 5,786,095). Fujita does not specifically disclose a thickness of the fire retardant intumescent composition. Batdorf, however, disclose an intumescent based thermal barrier system comprising a silicate solution, an expandable microsphere intumescent agent and a frit material (abstract). Batdorf discloses the intumescent based thermal barrier coating having a thickness of 0.3 mm (column 6, lines 18-20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the intumescent coating having a thickness as taught by Batdorf from the standpoints of weight reduction.
16. Applicants contend that Fujita is not combinable with Spicuzza because the intumescent materials are completely different. The examiner respectfully disagrees. As the products of Fujita and Spicuzza are structurally the same and related to a fire resistant thermally insulating composite material, i.e., a foam core disposed between two metal sheets and an intumescent material interposed between the metal sheet and the foam core. The intumescent materials of both products may be chemically different but they all serve as the fire retardant coatings for protection of combustible, heat sensitive substrate upon exposure to fire. Since the polystyrene foam is usable with the intumescent material to form a fire retardant composite material, one skilled in the art would be motivated to replace the polyisocyanurate foam with a polystyrene foam because two

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materials have been shown in the art to be recognized equivalent foam cores for the fire resistant, thermally insulating boards. Note that the basis of the rejection is about the substitution of the foam material, not the substitution of the fire resistant composite material; therefore, it is unnecessary to use all of the processing steps disclosed in Spicuzza for making the composite material. Accordingly, the art rejections are sustained.

### ***Conclusion***

**17. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**18.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hai Vo/  
Primary Examiner, Art Unit 1794